NSW Respiratory Surveillance Report - week ending 29 October 2022

COVID-19 Summary

- This week there has been an increase in the number of people notified with COVID-19 and the proportion of PCR tests that are positive. Together with information about variant mix and COVID-19 activity in other states, these data indicate the start of a new wave of infections.
- There are several subvariants of the virus circulating and BA.4 and BA.5 dominance is diminishing (63%).
- We are closely monitoring S-gene target and sequencing data in relation to the BA.2 sub-lineages and we are also monitoring other emerging variants.
- There were 9,707 people diagnosed with COVID-19 this week, an increase of 11.4% since the previous week. PCR testing for COVID-19 has decreased by 1.1% compared to the previous week. The proportion of PCR tests that were positive for COVID-19 has increased from 7% to 9%.
- The seven-day rolling average of daily hospital admissions decreased to an average of 32 admissions by the end of this week, compared with 33 admissions at the end of the previous week. There were 227 people with COVID-19 admitted to hospital and 18 people admitted to ICU this week.
- Emergency department presentations for coronaviruses requiring an admission have increased to 118 from 96 admissions in the previous week.
- There were 17 COVID-19 deaths reported this week. Of these, 4 (24%) had not received three doses of vaccine. One death was a person aged under 65 years. Deaths may not have occurred in the week in which they were reported.

Other respiratory viruses summary

- Influenza activity is currently at low levels but influenza vaccination continues to be recommended. If you are travelling to the northern hemisphere please make sure you are up-to-date with COVID and influenza vaccinations

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Data sources

The NSW Respiratory Surveillance Report consolidates data from a range of sources to provide an understanding of what is happening in the community. This data includes laboratory results, hospital administrative data, emergency department syndromic surveillance, death registrations and community surveys.

COVID-19 hospital admissions, intensive care unit admissions, and deaths

- COVID-19 vaccines are very effective in preventing the severe impacts of infections with the virus. Over 95 per cent of people aged 16 and over in NSW have received two doses of a COVID-19 vaccine, while more than 70 per cent of people eligible for their third dose have received it. With such high vaccination coverage in the community, a high proportion of people admitted to hospital or intensive care unit (ICU) with COVID-19 are now vaccinated with two or three doses. However, people who are not vaccinated remain likely to suffer severe COVID-19. Note that some people with COVID-19 who are admitted to hospital or ICU are admitted for conditions unrelated to their COVID-19 infection, and these admissions will not be prevented by vaccination.

- Despite the substantial protection from COVID-19 provided by vaccination, older age remains a significant risk factor for serious illness and death with COVID-19, particularly when combined with significant underlying health conditions.

Figure 1. Daily seven-day rolling average of people with COVID-19 admitted to hospital within 14 days of their diagnosis, NSW, 01 July to 29 October 2022

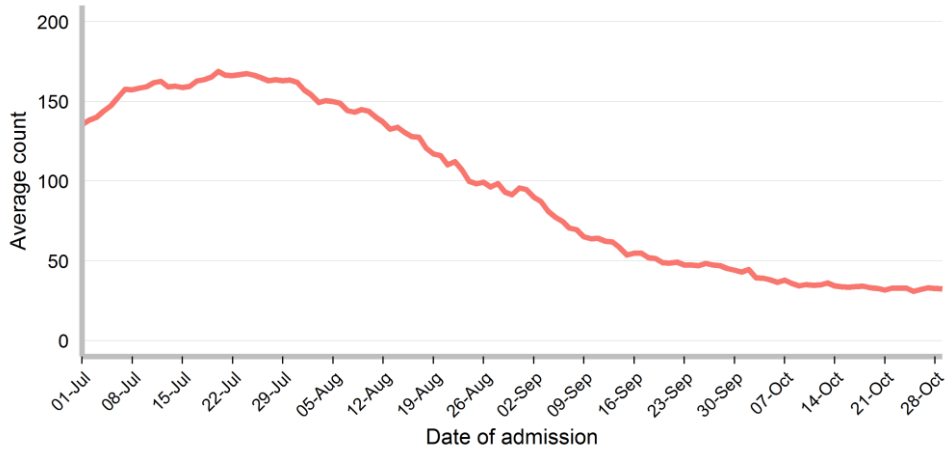


Figure 2. Daily seven-day rolling average of people with COVID-19 admitted to intensive care units, NSW, 01 July to 29 October 2022

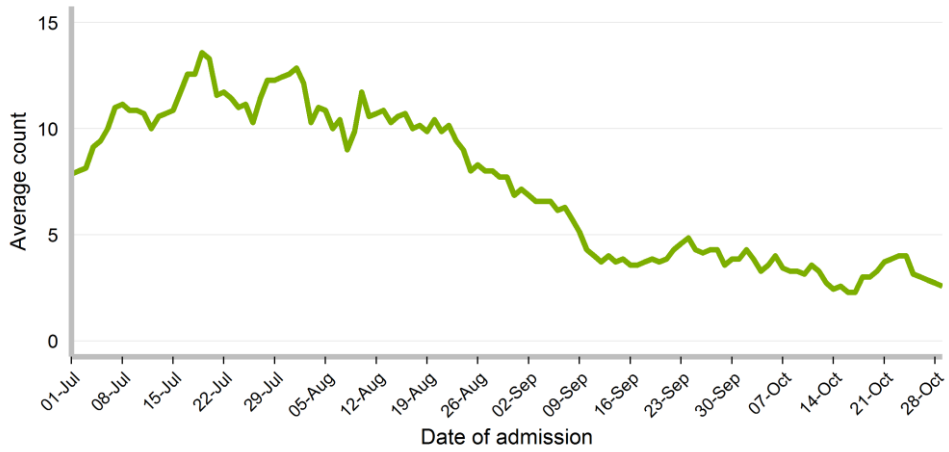
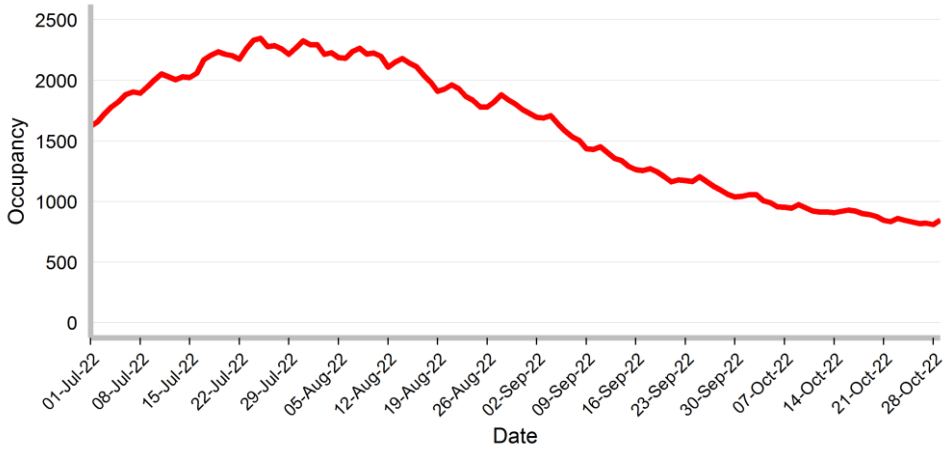


Figure 3. Number of people in hospital with COVID-19 by day, NSW, 01 July to 29 October 2022



- Hospital admissions in people with COVID-19 have decreased in the last week. ICU admissions for people with COVID-19 have decreased in the last week
- Two hundred and twenty seven people diagnosed with COVID-19 in the previous 14 days were admitted to a NSW public hospital. The seven-day rolling average of daily hospital admissions decreased to an average of 32 admissions by the end of this week, compared with 33 admissions at the end of the previous week.
- Eighteen people diagnosed with COVID-19 were admitted to ICU. The seven-day rolling average of daily ICU admissions decreased to an average of 3 admissions by the end of this week, compared with 4 admissions at the end of the previous week
- The number of people in hospital with COVID-19 has increased to 846 at the end of this week compared to 834 at the end of last week.

Table 1. People with a COVID-19 diagnosis in the previous 14 days who were admitted to hospital, admitted to ICU or reported as having died in the week ending 29 October 2022

	Admitted to hospital	Admitted to ICU	Deaths
Gender			
Female	105	7	9
Male	122	11	8
Age group (years)			
0-9	12	0	0
10-19	3	0	0
20-29	11	0	0
30-39	14	0	0
40-49	10	3	0
50-59	15	1	1
60-69	25	4	0
70-79	57	7	2
80-89	54	3	6
90+	26	0	8
Local Health District of residence*			
Central Coast	14	0	0
Illawarra Shoalhaven	21	0	0
Nepean Blue Mountains	10	1	2
Northern Sydney	25	3	3
South Eastern Sydney	30	1	3
South Western Sydney	24	3	2
Sydney	20	4	1
Western Sydney	16	2	2
Hunter New England	16	0	2
Mid North Coast	11	2	1
Murrumbidgee	13	0	0
Northern NSW	8	0	0
Southern NSW	6	0	0
Western NSW	6	2	1
Vaccination status^			
Four or more doses	105	4	8
Three doses	53	6	3
Two doses	22	2	4
One dose	0	0	0
No doses	0	0	0
Unknown	47	6	2
Total	**227**	**18**	**17**

*Excludes cases in correctional settings

^Vaccination status is determined by matching to Australian Immunisation Register (AIR) data. Name and date of birth need to be an exact match to that recorded in AIR. People with unknown vaccination status were unable to be found in AIR, though may have vaccination details recorded in AIR under a shortened name or different spelling.

- Of the 17 people who were reported to have died with COVID-19, 11 (65%) were known to have received 3 or more doses of a COVID-19 vaccine, while 4 had received two doses. The vaccination status of the remaining 2 were unable to be determined.[1]
- Eight were aged care residents. Two of these people died in hospital and 6 died at an aged care facility.
- Two of the deaths occurred at home. Of these, two were diagnosed with COVID-19 prior to death.
- From this week all reported deaths will be identified from the NSW Registry of Births Deaths and Marriages (BDM). If a person dies in NSW, their death must be registered under the *Births, Deaths and Marriages Registration Act 1995 (Part 7)*. NSW Health receives a secure feed from the BDM on a daily basis under the *Public Health Act 2010 (Part 129A)*. Seventy five percent of COVID-19 deaths in 2022 have been registered in less than four weeks of death. Deaths reported to a coroner will be registered with the BDM, however cause of death information may be delayed as it is not recorded until there is a coronial determination. Deaths may be excluded if there was a clear alternative cause of death that was unrelated to COVID-19 (e.g. major trauma).

[1] The Australian Technical Advisory Group on Immunisation (ATAGI) recommends that everyone aged 16 years and over has three doses of a COVID-19 vaccine, with an additional winter dose recommended for other people at increased risk of severe illness.

Notifications of COVID-19

Table 2. Notifications of COVID-19 by gender, age group, Local Health District, NSW, tested in the week ending 29 October 2022

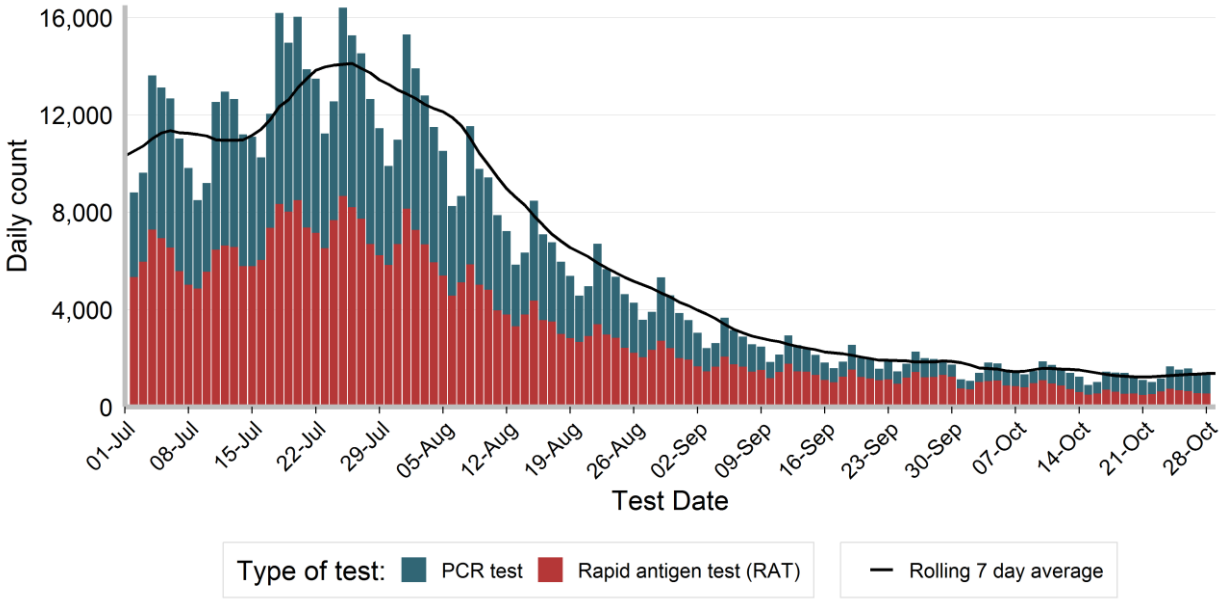
	Week ending 29 October	Year to date *
Gender		
Female	5,339 (55.0%)	1,622,709 (52.6%)
Male	4,359 (44.9%)	1,460,429 (47.3%)
Not stated / inadequately described	9 (0.1%)	4,462 (0.1%)
Transgender	0 (0.0%)	6 (0.0%)
Age group (years)		
0-4	277 (2.9%)	140,764 (4.6%)
5-9	291 (3.0%)	197,440 (6.4%)
10-19	650 (6.7%)	435,757 (14.1%)
20-29	1,179 (12.1%)	500,748 (16.2%)
30-39	1,542 (15.9%)	538,058 (17.4%)
40-49	1,408 (14.5%)	455,078 (14.7%)
50-59	1,346 (13.9%)	354,843 (11.5%)
50-69	1,366 (14.1%)	247,586 (8.0%)
70-79	1,095 (11.3%)	138,769 (4.5%)
80-89	429 (4.4%)	59,475 (1.9%)
90+	124 (1.3%)	18,843 (0.6%)
Local Health District of residence[#]		
Central Coast	361 (3.8%)	136,197 (4.5%)
Illawarra Shoalhaven	608 (6.4%)	174,242 (5.7%)
Nepean Blue Mountains	496 (5.2%)	157,640 (5.2%)
Northern Sydney	1,292 (13.6%)	364,245 (11.9%)
South Eastern Sydney	1,186 (12.5%)	347,679 (11.4%)
South Western Sydney	935 (9.9%)	380,118 (12.4%)
Sydney	1,006 (10.6%)	258,213 (8.4%)
Western Sydney	1,362 (14.4%)	410,808 (13.4%)
Far West	26 (0.3%)	10,223 (0.3%)
Hunter New England	968 (10.2%)	372,627 (12.2%)
Mid North Coast	198 (2.1%)	70,299 (2.3%)
Murrumbidgee	300 (3.2%)	102,615 (3.4%)
Northern NSW	236 (2.5%)	89,535 (2.9%)
Southern NSW	252 (2.7%)	75,045 (2.5%)
Western NSW	246 (2.6%)	107,446 (3.5%)
Aboriginal status[^]		
Aboriginal and/or Torres Strait Islander	308 (3.2%)	117,257 (3.8%)
Not Aboriginal or Torres Strait Islander	6,414 (66.1%)	2,491,642 (80.7%)
Not Stated / Unknown	2,985 (30.8%)	478,707 (15.5%)
Total	**9,707 (100%)**	**3,087,606 (100%)**

[*]Excludes 180,433 positive RATs registered up to 19 January 2022 for whom demographic information is not available.

[#]Excludes cases in correctional settings

[^]Aboriginal status is reported by COVID-19 cases when completing their RAT registration or responding to a short text message survey sent to cases detected by PCR. Not all cases respond to the question.

Figure 4. People notified with COVID-19, by date of test and type of test performed, NSW, 01 July to 29 October 2022



- There were 9,707 people diagnosed with COVID-19 this week, an increase of 11.4% since the previous week.

Figure 5. Daily seven-day rolling average rate of COVID-19 notifications per 100,000 population, by age group and test date, NSW, 01 July to 29 October 2022

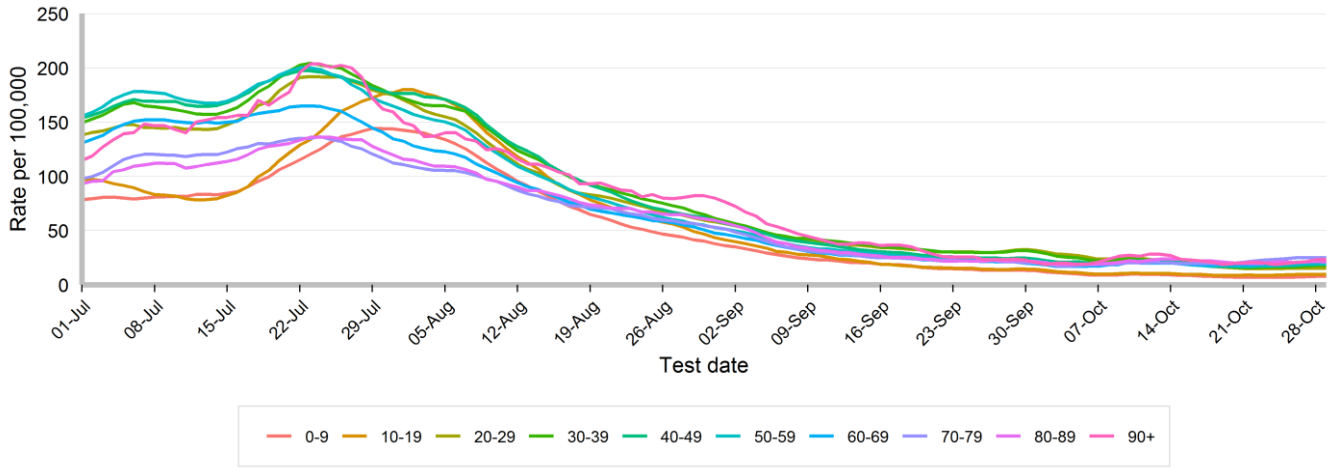


Figure 6. Daily seven-day rolling average rate of COVID-19 notifications per 100,000 population, by metropolitan Local Health District and test date, NSW, 01 July to 29 October 2022

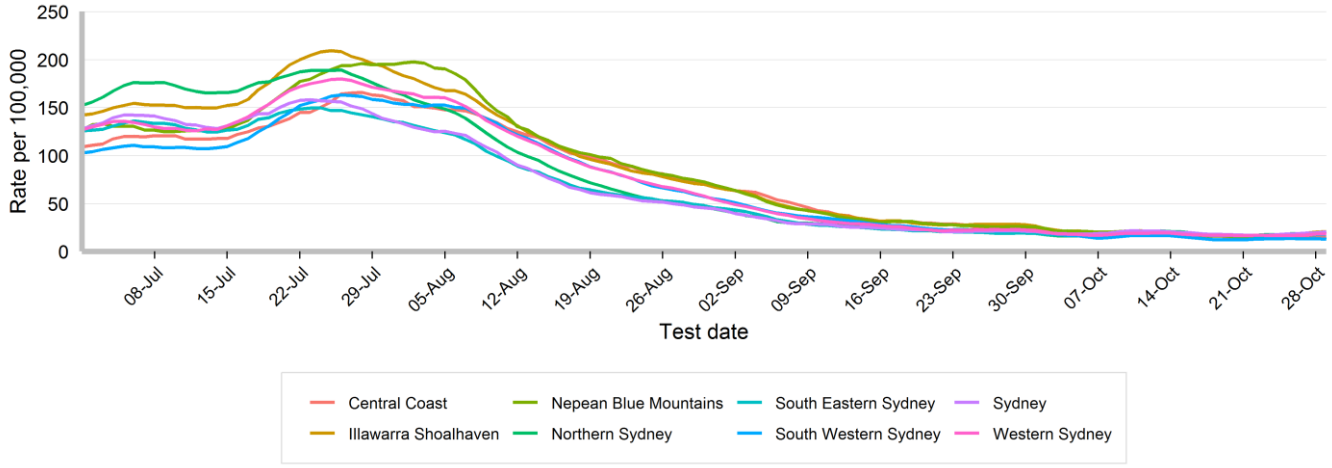
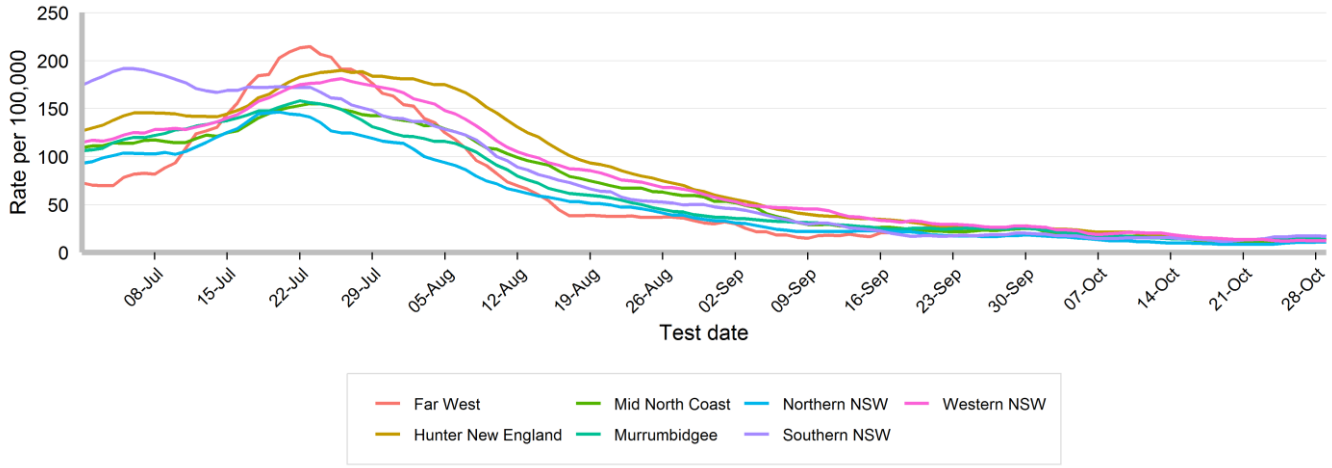


Figure 7. Daily seven-day rolling average rate of people reported with COVID-19 per 100,000 population, by rural and regional Local Health District and test date, NSW, 01 July to 29 October 2022



Emergency department and community surveillance

Public Health Rapid, Emergency, Disease and Syndromic Surveillance (PHREDSS) system

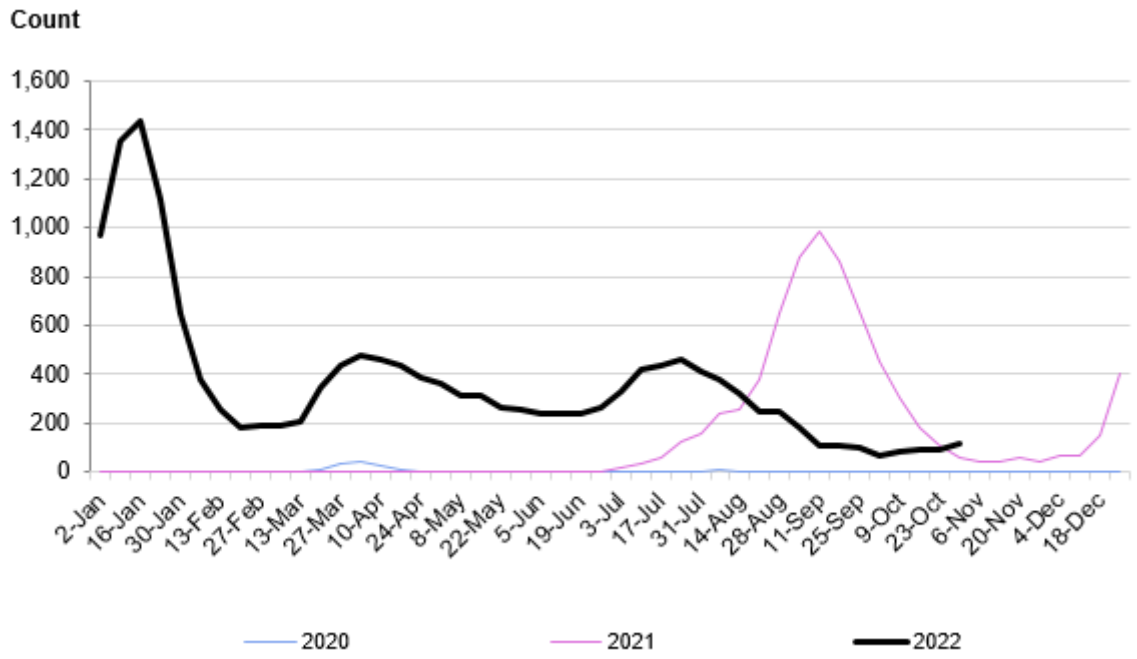
The NSW Public Health Rapid, Emergency, Disease and Syndromic Surveillance (PHREDSS) system provides daily monitoring of most unplanned presentations to NSW public hospital emergency departments (EDs) and all emergency Triple Zero (000) calls to NSW Ambulance. Emergency hospital presentations and ambulance calls are grouped into related acute illness and injury categories.

The number of presentations and calls in each category is monitored over time to quickly identify unusual patterns of illness. Unusual patterns could signify an emerging outbreak of disease or issue of public health importance in the population. PHREDSS is also useful for monitoring the impact of seasonal and known disease outbreaks, such as seasonal influenza or gastroenteritis, on the NSW population.

The 88 NSW public hospital EDs used in PHREDSS surveillance account for 95% of all ED activity in NSW public hospitals in 2020-2021, including most major metropolitan public hospitals (99%) and rural public hospitals (89%).

The emergency department *'coronaviruses/SARS'* surveillance syndrome includes provisional diagnoses (SNOMEDCT and ICD-10-AM codes) for coronavirus infections SARS, MERS, COVID-19 or other coronaviruses, or clinical condition of Severe Acute Respiratory Syndrome (SARS). It excludes testing and suspected coronavirus codes. There are no IDC-9 codes for COVID-19, so COVID-19 ED presentations at Albury Hospital will be mapped to the fever/unspecified infection surveillance syndrome. A person with COVID-19 may be admitted for reasons other than COVID-19, and of this the number of admissions from ED with a diagnosis of coronaviruses/SARS will be less than the number of confirmed cases of COVID-19 who are in hospital.

Figure 8. Weekly counts of unplanned emergency department (ED) presentations for 'coronaviruses/SARS', that were admitted, for 2022 (black line), compared with the previous two years (coloured lines), persons of all ages, 88 NSW hospitals

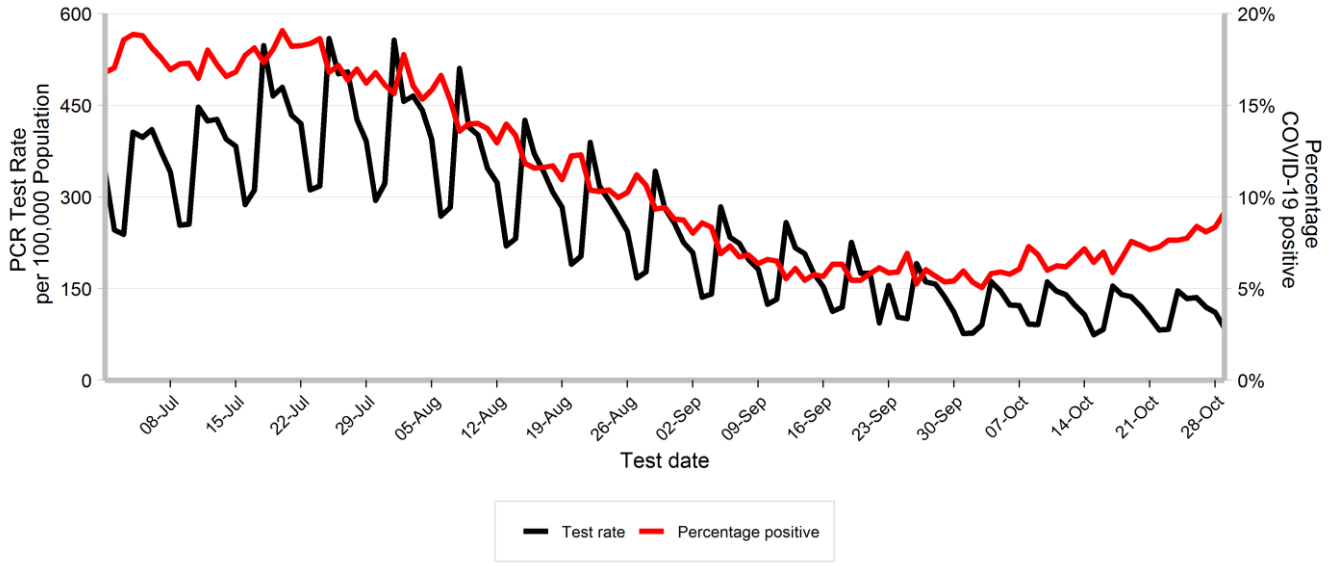


- Emergency department presentations for coronaviruses/SARS requiring an admission have increased to 118 from 96 admissions in the previous week.

Laboratory Surveillance

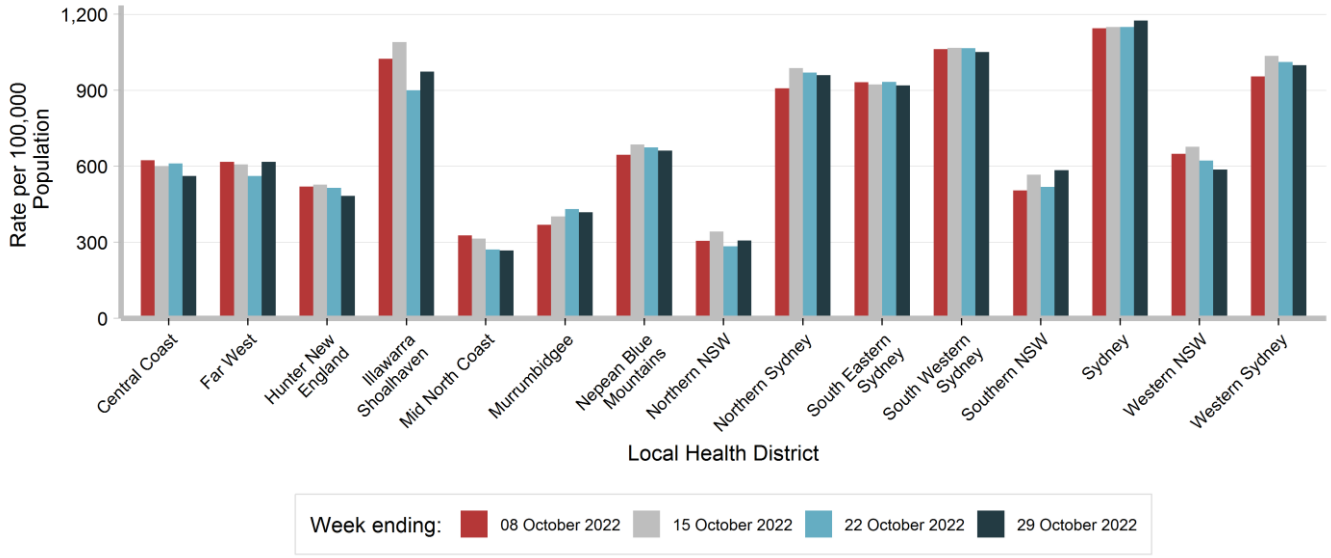
COVID-19 PCR testing

Figure 9. Rate of PCR tests for COVID-19 per 100,000 population per day, and percentage of PCR tests which were positive for COVID-19, by test date, NSW, 01 July to 29 October 2022



- There were 68,883 PCR tests reported this week. This is a 1.1% decrease compared to 69,667 PCR tests reported in the previous week.
- The percentage of PCR tests that were positive for COVID-19 has increased to 9.2% compared to 7.3% at the end of the previous week admissions by the end of this week.

Figure 10. Rate of PCR tests for COVID-19 per 100,000 population by Local Health District and test date, NSW, in the four weeks to 29 October 2022



COVID-19 Whole Genome Sequencing

Whole genome sequencing (WGS) is a laboratory procedure that identifies the genetic profile of an organism. WGS can help understand how a virus transmits, responds to vaccination and the severity of disease it may cause. It can also help to monitor the spread of the virus by identifying specimens that have are genomically similar. WGS has been used in NSW since the start of the COVID-19 pandemic to inform epidemiological investigations, and to monitor for and analyse the behaviour of new SARS-CoV-2 variants circulating in the community. WGS is conducted at three NSW reference laboratories. Prior to August 2021, low community transmission meant that most positive specimens were able to be sequenced. However, since that time high case numbers have required prioritisation of specimens for sequencing.

Specimens from people with COVID-19 who are admitted to hospital or an ICU are prioritised to identify and understand lineages with increased disease severity. Specimens from overseas arrivals are also prioritised to monitor for the introduction of new variants into the community. This is not a random sample, therefore the proportion of sequences identified is not necessarily reflective of their distribution in the community. There is a lag between the date a PCR test is taken and the date that the results of WGS are reported, therefore the count of sequences for recent dates will increase over time.

Variants of Concern

- Like all viruses, the SARS-CoV-2 virus changes over time. The World Health Organization monitors these changes and classifies lineages according to the risk that they pose to global public health. Those that they identify as having changes that increase transmissibility, increase virulence, or decrease the effectiveness of vaccines or treatments are designated as variants of concern (VOCs).
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Table 3. Variants of concern (VOCs) identified by whole genome sequencing (WGS) of virus from people who tested positive for SARS CoV-2 by PCR, by test date, NSW, in the four weeks to 22 October 2022

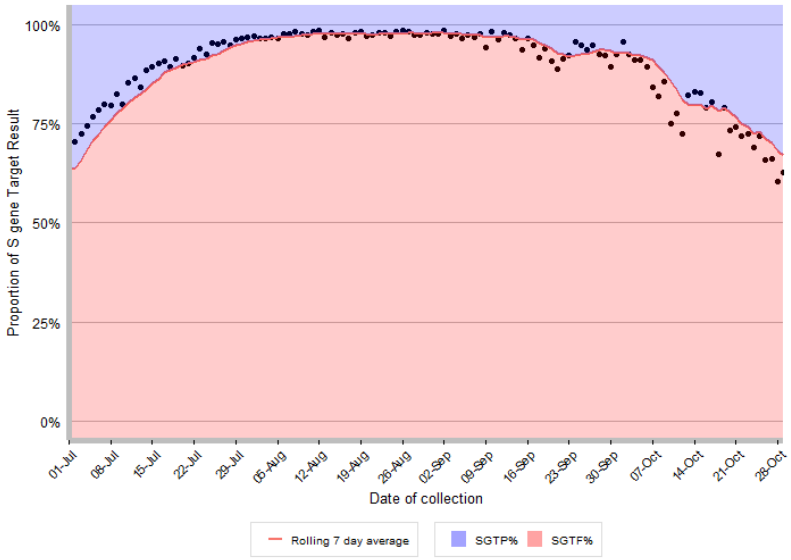
Variant	Week ending			
	01 October	08 October	15 October	22 October
Dual Infection	0 (0%)	0 (0%)	1 (0.1%)	0 (0%)
Omicron (BA.2)	29 (8.1%)	12 (2.3%)	19 (2.8%)	7 (2.5%)
Omicron (BA.2.3.20)	1 (0.3%)	2 (0.4%)	1 (0.1%)	1 (0.4%)
Omicron (BA.2.75)	48 (13.4%)	42 (8.2%)	52 (7.7%)	60 (21.3%)
Omicron (BA.2.75.2)	9 (2.5%)	5 (1%)	17 (2.5%)	9 (3.2%)
Omicron (BA.4)	0 (0%)	1 (0.2%)	2 (0.3%)	5 (1.8%)
Omicron (BA.4.6)	15 (4.2%)	16 (3.1%)	23 (3.4%)	5 (1.8%)
Omicron (BA.5)	243 (67.9%)	404 (78.4%)	497 (73.4%)	147 (52.1%)
Omicron (BJ.1)	1 (0.3%)	1 (0.2%)	1 (0.1%)	3 (1.1%)
Omicron (BQ.1)	0 (0%)	7 (1.4%)	16 (2.4%)	11 (3.9%)
Omicron (BQ.1.1)	9 (2.5%)	8 (1.6%)	18 (2.7%)	14 (5%)
Recombinant (XBB)	2 (0.6%)	17 (3.3%)	29 (4.3%)	20 (7.1%)
Recombinant (XBC)	1 (0.3%)	0 (0%)	1 (0.1%)	0 (0%)
Total	358	515	677	282

- The Omicron variant is currently the dominant COVID-19 variant circulating in the NSW community. Most recent specimens have been identified as the BA.5 subvariant.

S Gene detection as a proxy for the BA.2 omicron sub-lineage

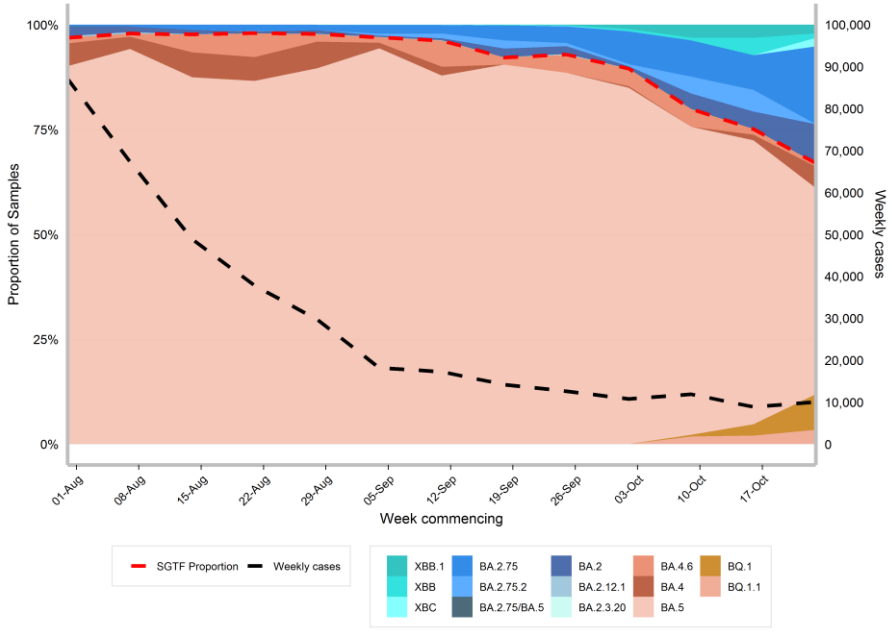
- The BA.1, BA.4 and BA.5 subvariants of the Omicron variant have a mutation that results in a failure of certain PCR test platforms to detect the S gene. This mutation is typically not present in the BA.2 subvariant, and therefore the detection of an S gene can be used as a proxy to estimate the prevalence of BA.2 in the community.
- A PCR testing platform used by a large private pathology provider in NSW can routinely report on detection of the S gene in a specimen positive for SARS-CoV-2. Around 37% of SARS-CoV-2 positive specimens currently have an S gene detected. A sample of S gene detected specimens have been prioritised for WGS, with the majority of these now being identified as BA.2.75.

Figure 11. Result of S gene target detection (percent positive (P) and negative(F)), 01 July to 29 October 2022



*SGTF is a failure to detect the presence of the S gene likely indicating a BA.1, BA.4 and BA.5 sub-lineage. SGTP is a positive detection of the presence of the S gene likely indicating a BA.2 sub-lineage**.**

Figure 12. Estimated distribution of COVID-19 sub-lineages in the community, 31 July 2022 to 22 October 2022



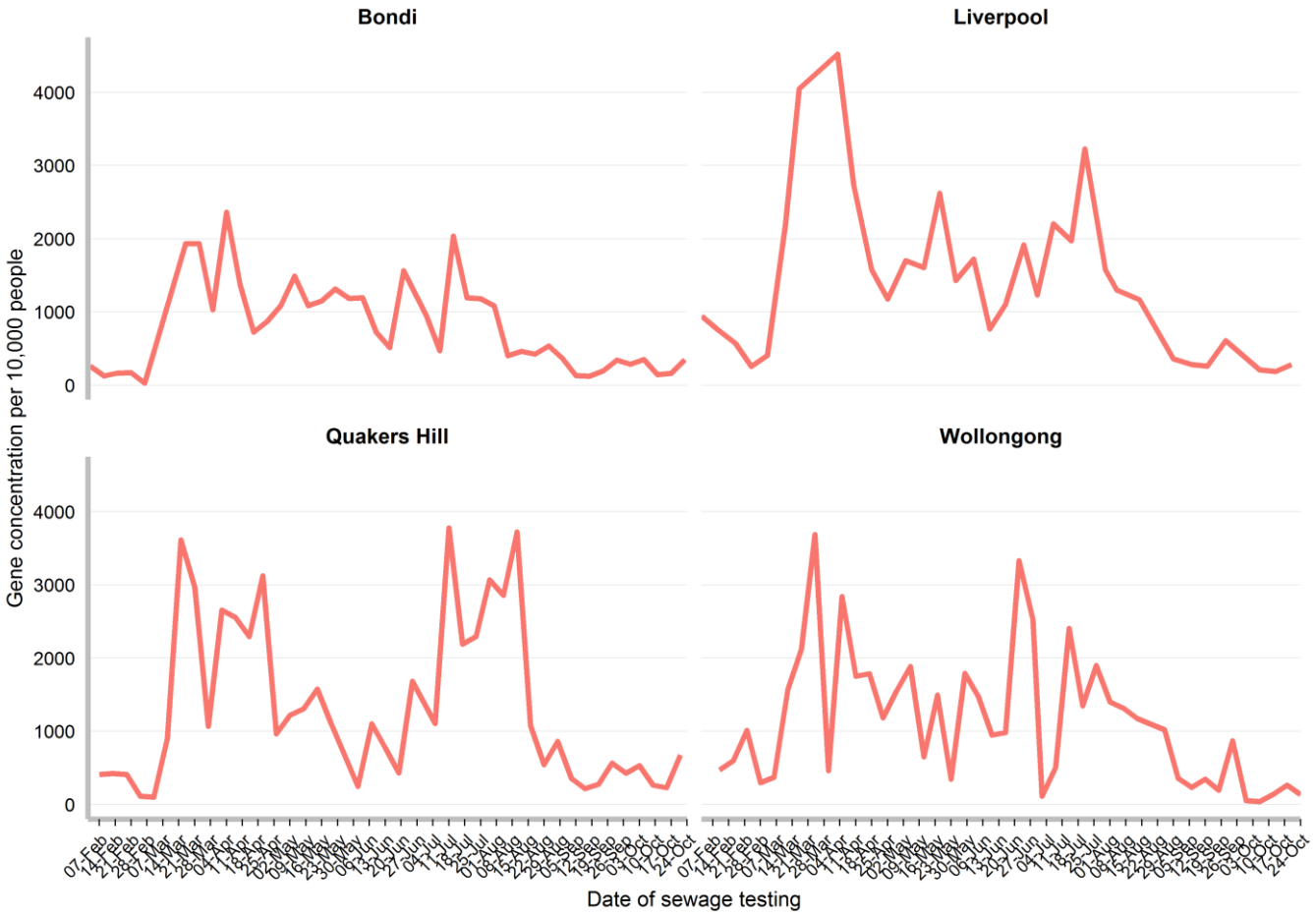
COVID-19 Sewage surveillance program

The NSW Sewage Surveillance Program tests untreated sewage for fragments of the SARS-CoV-2 virus that causes COVID-19. Gene copy numbers are influenced by many factors including virus shedding by people (which varies individually and over the course of the infection), dilution of virus within sewage – such as during rain, the period of time over which the sewage sample is collected, and the presence of chemicals and microorganisms in the sewage that affects how well the testing can detect SARS-CoV-2 virus fragments. Gene copy numbers are reported per 10,000 people in the catchment over time. Trends should be interpreted over an extended period to take into account these fluctuations in environmental conditions.

Trends are presented for Sydney Bondi, Quakers Hills, Liverpool and Wollongong sewage catchments from 5 February 2022 to the week ending 29 October 2022. Peaks in gene copy numbers can be seen that relate to peaks in COVID-19 notifications during March and July 2022. Dips in the graph in early April and July are due to heavy rain. Gene copy numbers have stabilised to low levels in recent weeks.

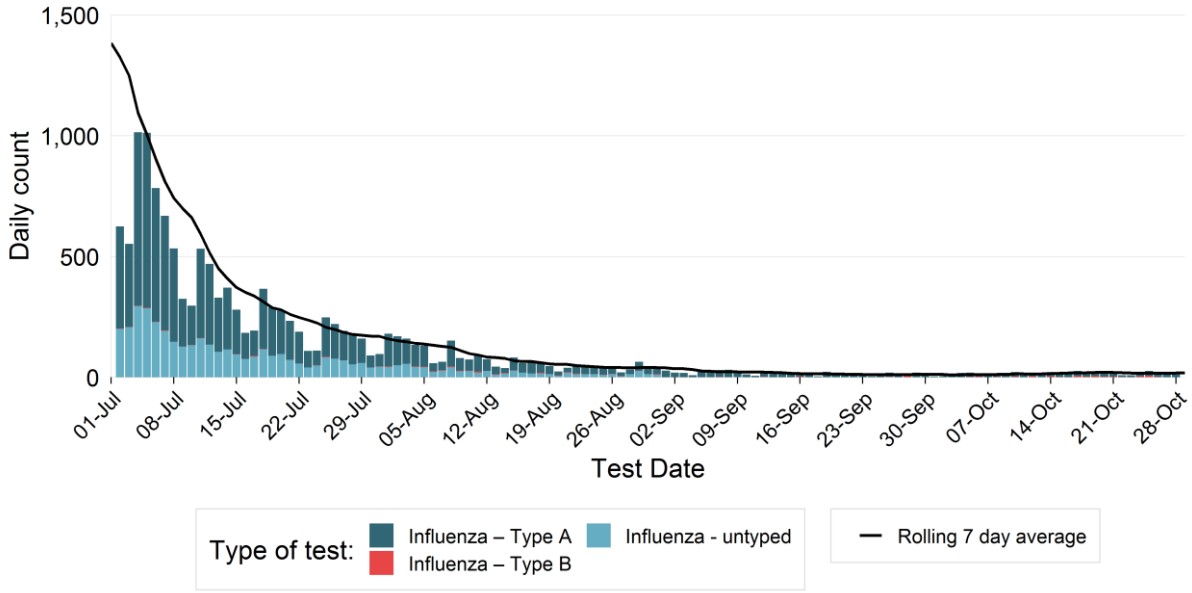
Gene copy numbers have increased in Bondi. Gene copy numbers have decreased in Wollongong. Results are not yet available for Liverpool and Quakers Hill, however in the week ending 22 October gene copy numbers in Quakers Hill increased and were stable in Liverpool. For more results, please see the COVID-19 Sewage Surveillance Program website: https://health.nsw.gov.au/Infectious/covid-19/Pages/sewage-surveillance-weekly-result.aspx.

Figure 13. Gene concentration, per 10,000 people in each sewage catchment, 5 February 2022 to 29 October 2022



Influenza and other respiratory viruses

Figure 14. People notified with influenza, by date of test and virus type, NSW, 01 July to 29 October 2022



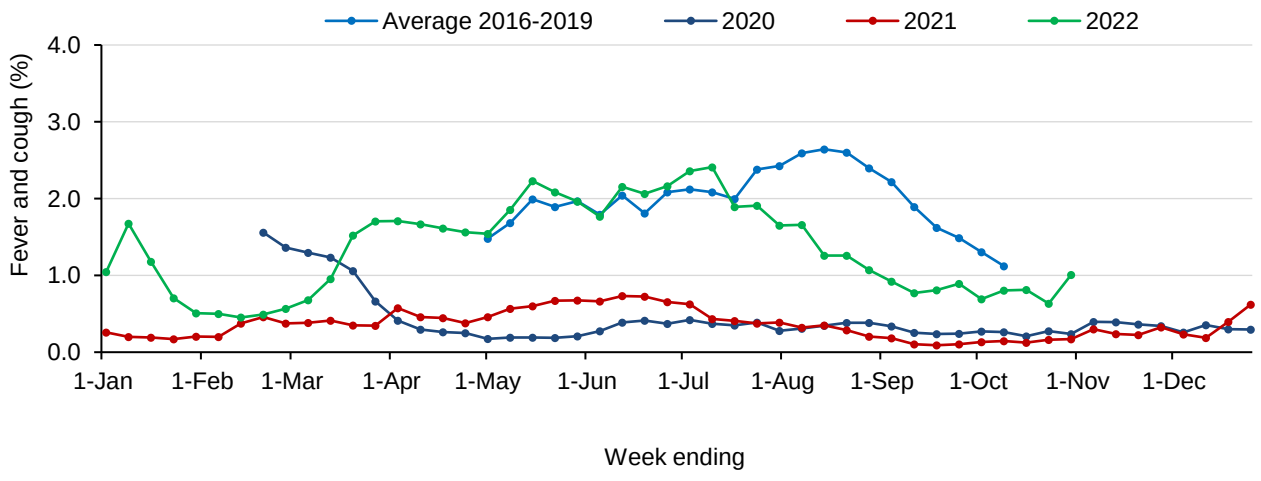
- There were 138 people diagnosed with influenza this week, a decrease of 0.7% since the previous week.

FluTracking

FluTracking is an online health surveillance system used to detect epidemics of influenza across Australia and New Zealand. Participants complete an online survey each week to provide community level influenza-like illness surveillance, consistent surveillance of influenza activity across all jurisdictions over time, and year to year comparisons of the timing, attack rates and seriousness of influenza in the community.

The FluTracking weekly sample size is currently in a decreased inter-seasonal period. Between 31 October 2022 and 1 April 2023 participants are able to opt out of completing the weekly survey. In previous years roughly two thirds of participants continue to complete the weekly survey. Should there be a surge in COVID-19 or influenza activity, participants who have consented will be asked if they would like to recommence surveys earlier. Additional FluTracking reports are available at: **https://info.flutracking.net/reports-2/australia-reports/**

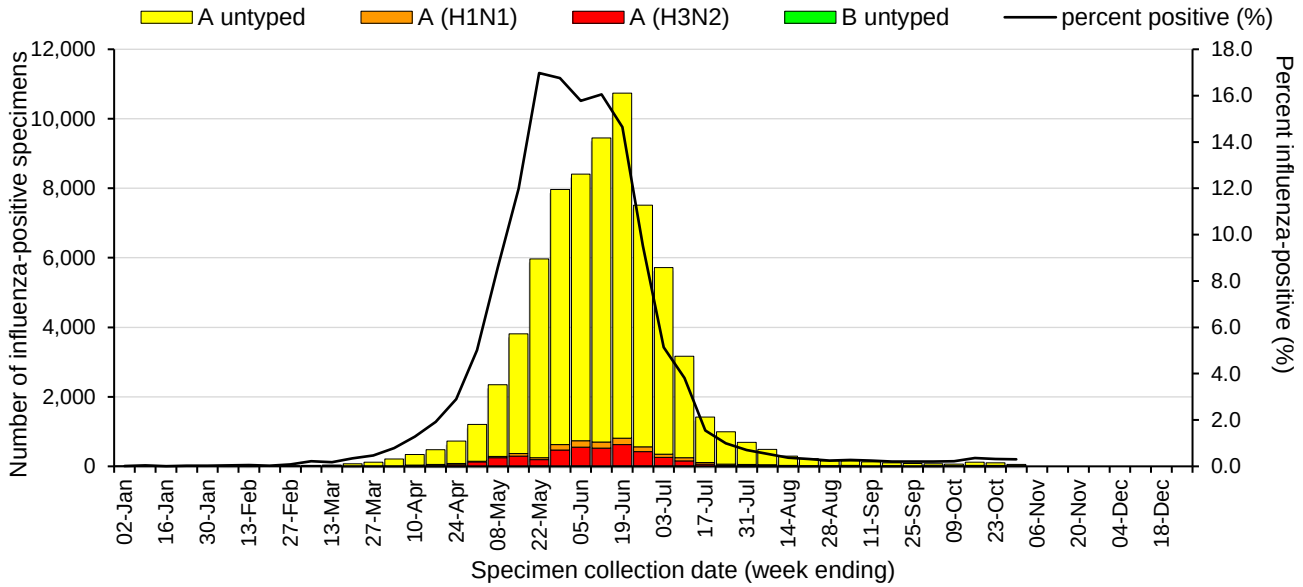
Figure 15. Proportion of FluTracking participants reporting influenza-like illness, NSW, 1 January to 29 October 2022



- The proportion of FluTracking participants reporting influenza-like illness increased this week.

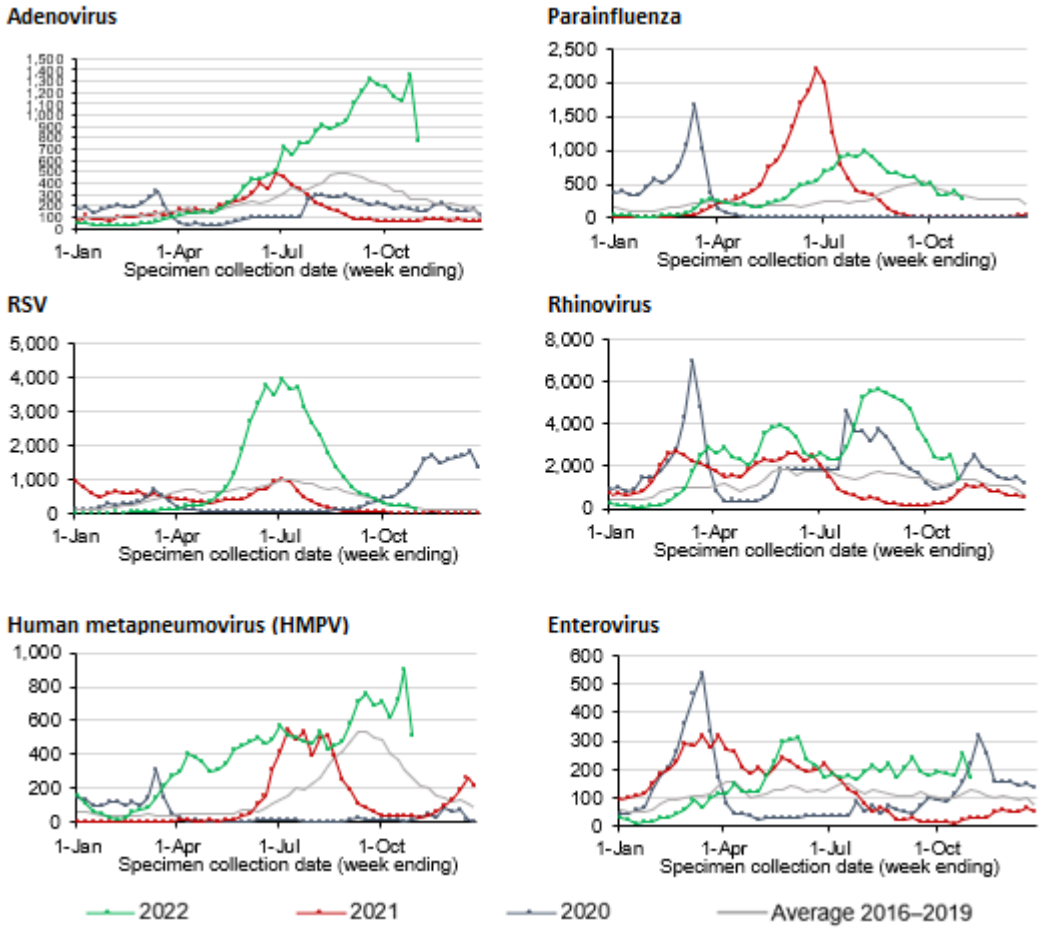
The NSW sentinel laboratory network comprises of 13 public and private laboratories throughout NSW who provide additional data on positive and negative test results. This helps us to understand which respiratory viruses are circulating as well as how much.

Figure 16. Number and proportion of tests positive for influenza at sentinel NSW laboratories, 1 January to 29 October 2022



- Of the 18,084 tests conducted for influenza, the proportion positive has remained stable at below 1%.

Figure 17. Number of positive PCR test results for other respiratory viruses at sentinel NSW laboratories, 1 January to 29 October 2022.



- Recent data is subject to change. For the week ending 29 October 2022, 7 out of 13 sentinel laboratories have provided testing data at the time of reporting.
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Table 4. Total number of respiratory disease notifications from sentinel laboratories, NSW in the four weeks to 29 October 2022

	Week ending				Year to date
	09 October	16 October	23 October	30 October*	
Adenovirus	1,159	1,123	1,348	770	22,044
Respiratory syncytial virus (RSV)	208	237	204	113	45,575
Rhinovirus	2,377	2,321	2,504	1,349	113,942
Human metapneumovirus (HMPV)	616	721	900	509	16,964
Enterovirus	181	174	254	167	6,589
Number of PCR tests conducted	31,939	33,606	32,468	18,084	1,845,406

*Recent data is subject to change. For the week ending 29 October 2022, 7 out of 13 sentinel laboratories have provided testing data at the time of reporting.